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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/638,374	08/15/2000	Mario C. Baldassari	ABBLUM/246/US	1528

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Alix Yale & Ristas LLP  
750 Main Street  
Hartford, CT 06103-2721

EXAMINER

PREISCH, NADINE G

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 11/29/2001

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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/638,374

Applicant(s)

BALDASSARI ET AL.

Examiner

Nadine Preisch

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 6-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1, 2, 6-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-2, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mounce (3,579,436) in view of Alpert et al.(3,681,231).

Applicants are claiming a two stage method for hydrocracking a high boiling point hydrocarbon wherein a liquid selected from an aromatic solvent and feedstock is blended with the first stage effluent prior to second stage hydrocracking. The dependent claims contain limitations directed at specific product boiling points, reactor systems and solvent amounts.

The reference of Mounce (3,579,436) discloses a multistage hydrocracking process for treating a heavy hydrocarbon oil. See column 1, lines 11-15. The process is conducted in an expanded bed (expanded bed = ebullated bed). See column 2, lines 55-65. The process involves adding a diluent to the first stage hydrocracking effluent prior to passing it to a second stage hydrocracking step. See column 1, lines 20-24 and column 2, lines 3-10. Mounce (3,579,436)

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teaches that the diluent can be "any" hydrocarbon fraction boiling in the range of 500-975 °F that is below the boiling range of the unconverted heavy hydrocarbon oil. See column 2, lines 12-15. The diluent is added in an amount from 20% to 100% by volume per volume of the feed. See column 3, lines 9-11. The reference further teaches that the treated hydrocarbons from the second reactor are fractionated. See column 2, lines 23-27.

The reference of Mounce (3,579,436) succeeds in disclosing a hydrocracking process with steps corresponding to applicants' first and second stage hydrocracking, solvent addition and product fractionation.

Several differences are noted between Mounce (3,579,436) and applicants' claimed invention. The reference of Mounce (3,579,436) is silent about the use of an aromatic solvent as the diluent. In addition, the reference is silent about the specific component breakdown of the first stage effluent. Also, Mounce (3,579,436) does not teach the addition of 5-10% by volume diluent.

The reference of Alpert et al. (3,681,231) discloses a hydrocracking process for treating a heavy hydrocarbon wherein conversion is increased by the addition of an aromatic diluent. See column 1, lines 15-25 and column 2, lines 39-50. Alpert et al. (3,681,231) teaches that suitable apparatus includes ebullated bed apparatus. See column 2, lines 44-47.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to select an aromatic solvent (diluent) as the specific diluent in the Mounce (3,579,436) process because the reference of Alpert et al. (3,681,231) teaches that improvement in hydrocracking operability of an asphaltene containing petroleum can be obtained by blending an "aromatic" diluent.

In addition, the first stage effluent produced in Mounce (3,579,436) is considered to contain similar components to the first stage effluent claimed by applicants because a similar feed is subjected to a hydrocracking step which would naturally result in the production of similar products.

Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made desiring lower conversion, desiring lower conversion or to use less severe processing conditions to modify the process of Mounce (3,579,436) by using less solvent because Mounce suggests ooooooooooooooooooooooooooooooooooooo

***Claim Rejections - 35 USC § 103***

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mounce (3,579,436) in view of Alpert et al.(3,681,231) as applied to claims 1-2, 6 and 8 above, and further in view of Beaton et al.(4,707,466).

A difference is noted between the modified teachings of Mounce (3,579,436) and applicants' claimed invention. The reference of Mounce (3,579,436) does not disclose the use of a fixed bed reactor.

The reference of Beaton et al.(4,707,466) is cited for the general teaching that it is known that heavy feeds often plug and deactivate fixed bed systems. See column 1, lines 21-35 and 42-54.

It would have been obvious to one of ordinary skill in the art at the time the invention was made willing to accept reactor plugging and deactivation to change the modified process of Mounce (3,579,436) by utilizing a fixed bed because Beaton et al.(4,707,466) illustrates that it is

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known that fixed beds can become plugged and deactivated by heavy feeds. Since plugging is known, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select any type of reactor based on the acceptable degree of plugging and/or the asphaltene/metal content of a specific feed because Beaton et al.(4,707,466) illustrates that the effects of asphaltene/metals on fixed and ebullated beds are known. It is within the level of ordinary skill in the art to select a type of reactor bed based on the acceptable degree of catalyst plugging and/or feed asphaltene/metal content.

***Claim Rejections - 35 USC § 103***

Claims 1, 2, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aldridge et al.(4,765,882) in view of Cash et al. (5,522,983) and Alpert et al.(3,681,231).

The reference of Aldridge et al. (4,765,882) discloses a two stage hydroconversion for a heavy hydrocarbon feed wherein a second portion of the feed is added to the first stage effluent prior to passing it to the second stage hydroconversion step. See column 2, lines 1-10, column 1, lines 41-46. The first portion of feed comprises 25-90 percent of the total chargestock (leaving less than 10% for a second addition meeting applicants' intermediate addition amount). The hydroconversion produces lower boiling point products. See column 1, lines 22-25. The reference illustrates that the fresh feed represented by line 18 of the figure and the hydroconverted effluent from the first stage represented by line 16 are blended prior to entering the second stage reactor. See Figure. Aldridge et al.(4,765,882) also discloses a final product fractionation step. See column 3, lines 67-68 and column 4, lines 1-3.

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The reference of Aldridge et al. (4,765,882) succeeds at disclosing a two stage hydroconversion process with steps corresponding to applicants' two stage hydrocracking, blending of feedstock material after the first stage hydrotreatment, and product fractionation.

Several differences are noted between the reference of Aldridge et al. (4,765,882) and applicants' claimed invention. The reference does not refer to the hydroconversion reaction as hydrocracking. In addition, the reference is silent about the specific component breakdown of the first stage effluent. Also, the reference of Aldridge et al. (4,765,882) does not disclose the blending of an aromatic solvent with the feedstock to the second stage.

The reference of Cash et al. (5,522,983) is cited to illustrate that hydroconversion is known to include hydrocracking. See column 1, lines 14-16.

The reference of Alpert et al. (3,681,231) discloses a hydrocracking process for treating a heavy hydrocarbon wherein conversion is increased by the addition of an aromatic diluent. See column 1, lines 15-25 and column 2, lines 39-50. Alpert et al. (3,681,231) teaches that suitable apparatus includes ebullated bed apparatus. See column 2, lines 44-47.

Since Aldridge et al. (4,765,882) is known to produce lower boiling point products, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the Aldridge et al. (4,765,882) process would encompass hydrocracking because Cash et al. (5,522,983) teaches that hydroconversion is known to include hydrocracking. Lower boiling point products are an indication that hydrocracking has been accomplished.

In addition, the first stage effluent produced in Aldridge et al. (4,765,882) is considered to contain similar components to the first stage effluent claimed by applicants because a similar

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feed is subjected to a hydrocracking step which would naturally result in the production of similar products.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the modified teachings of Aldridge et al.(4,765,882) by adding an aromatic solvent along with the feed to the second reactor because the reference of Alpert et al.(3,681,231) teaches an improvement in hydrocracking operability of an asphaltene containing petroleum can be obtained by blending an "aromatic" diluent with the feed.

### *Claim Rejections - 35 USC § 103*

Claim 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aldridge et al.(4,765,880) in view of Cash et al. (5,522,983) and Alpert et al.(3,689,231) as applied to claims 1, 2, and 9 above, and further in view of Beaton et al.(4,707,466).

Several differences are noted between the modified teachings of Beaton et al.(4,707,466) and applicants' claimed invention. The modified teachings are silent about the use of a fixed or ebullated bed system.

The reference of Beaton et al.(4,707,466) illustrates that ebullated beds and fixed beds have been used in hydrotreating operations. See column 1, lines 20-30. The reference also illustrates that it is known that heavy feeds plug and deactivate fixed bed systems. See column 1, lines 30-35.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to select any type of apparatus, such as a fixed bed or ebullated bed, that would accomplish a desired conversion in the Aldridge et al.(4,765,880) process because the reference



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of Beaton et al.(4,707,466) illustrates that the benefits and disadvantages of different reactor systems are known. It is within the level of ordinary skill to select any type of catalytic reactor system based on the acceptable degree of catalyst plugging and the specific feed asphaltene/metal content.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 6, and 8 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of copending Application No. 09/638,375 in view of Chervenak et al.(4,521,295).

Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to a two step hydrocracking process wherein a feedstock is blended with a first stage effluent prior to the second hydrocracking stage.

Several differences are noted between the present claims and the claims of Application No. 09/638,375. The claims of Application No. 09/638,375 include a step wherein the heavy

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hydrocarbon feed is separated and stripped prior to contact in the second hydrocracking bed. In addition, the present claims include specific blending proportions.

The reference of Chervenak et al.(4,521,295) is cited to illustrate that product separation/stripping is conventional in the art before reprocessing a desired heavy fraction. See column 1, lines 61-68.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to blend any amount of the feed with the first stage effluent in the claims of 09/638,375 that produces a desired result, including the proportions defined in present claim 4, because the claims of Application No. 09/638,375 do not restrict the amount of feed blended with the first stage effluent. In the absence of unexpected results, any amount could be blended.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the present claims to include intermediate effluent separation/stripping steps because the reference of Chervenak et al.(4,521,295) illustrates that employing such separating/stripping steps to obtain a desired heavy fraction before reprocessing a heavy fraction is known in the art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Response to Arguments***

Applicants' arguments filed 9-4-01 in paper no.5 have been fully considered but they are not persuasive.

Applicants arguments that the reference of Mounce does not disclose the use of an aromatic solvent as a diluent are not persuasive in overcoming the rejection because the secondary reference a Alpert et al. remedies the deficiency of Mounce with respect to the use of an aromatic diluent.

Applicants' argument that Mounce's addition of 20-100% by volume diluent is significantly greater than the limited amounts added in the present invention is not persuasive in overcoming the rejection. In response, it is maintained that Mounce suggests that the amount of diluent added is an optimizable variable because it discloses that the amount of diluent added can be determined by the amount of conversion desired in the second reactor and the by the specific characteristics of the feedstock (column 4, lines 16-18). The reference further suggests that for higher desired conversions and for more severe reactor conditions (temperature & residence time) a greater amount of diluent should be added (col 4, lines 16-20). Although the reference discloses a general range of 20-100% by volume of diluent, a skilled artisan processing a lighter feed or desiring less conversion would be motivated to add less diluent including applicants' 5-10% volume diluent. Applicants have not shown anything unexpected by the addition of 5-10% diluent.

Applicants' arguments stating that the secondary reference of Alpert et al adds the aromatic solvent (diluent) to the first and only reactor and not to an effluent from a first reactor in a two reactor system are not persuasive in overcoming the present rejection. In response, it is maintained that the secondary reference of Alpert et al. is not required to teach the addition of an aromatic solvent to a first stage effluent because the primary reference already suggests the addition of a diluent to a first stage effluent. Since the secondary reference of Alpert et al.

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teaches that it is desirable to add an aromatic diluent to a feed prior to hydrocracking, it successfully provides motivation for selecting an aromatic solvent as a diluent, no matter what stage it is added so long as it is added to a heavier feed prior to hydrocracking. In response to applicants' arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicants' argument that the provisional double patenting rejection is moot because the newly amended claims are all limited to blending an aromatic solvent with the first stage effluent prior to the second stage is not persuasive. In response, it is maintained that claim 2 of 09/638,375 includes blending an aromatic solvent and a portion of a feedstock with the first stage effluent prior to second stage hydrocracking. As a result, applicants' aromatic solvent/feedstock addition does not distinguish over the claims of 09/638,375.

Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nadine Preisch whose telephone number is 703-305-2667. The examiner can normally be reached on Monday through Thursday from 7:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode can be reached on 703-308-4311. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3599 for regular communications and 703-305-5408 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0661.

N.P.

November 16, 2001

NP

**NADINE PREISCH**  
**ART UNIT 1764**

